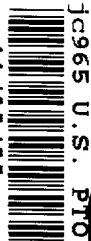


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Approved for use through 10/31/2002. OMB 0651-0032

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**UTILITY
PATENT APPLICATION
TRANSMITTAL**

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.

41003.P038

First Inventor

Jeffrey G. Ort

Title

Techniques For Displaying Non-blocking Always Visible Displays and Their Applications

Express Mail Label No.

EL605443126US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☒ Applicant claims small entity status.
See 37 CFR 1.27.
3. ☒ Specification [Total Pages **34**]
(preferred arrangement set forth below)
- Descriptive title of the invention
 - Cross Reference to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to sequence listing, a table, or a computer program listing appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets **10**]
5. Oath or Declaration [Total Pages **4**]
- a. ☒ Newly executed (original or copy)
- b. ☐ Copy from a prior application (37 CFR 1.63 (d))
(for continuation/divisional with Box 18 completed)
- i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s)
named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. ☐ Application Data Sheet. See 37 CFR 1.76

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)
8. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
- a. ☐ Computer Readable Form (CRF)
- b. Specification Sequence Listing on:
- i. ☐ CD-ROM or CD-R (2 copies); or
 - ii. ☐ paper
- c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☒ Assignment Papers (cover sheet & document(s))
10. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) ☒ Power of Attorney
11. ☐ English Translation Document (if applicable)
12. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Request and Certification under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.
17. ☐ Other:

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP)

of prior application No.: _____/_____

Prior application information:

Examiner _____

Group Art Unit: _____

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. CORRESPONDENCE ADDRESS☐ Customer Number or Bar Code Label

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Date

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FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$) 953.00

Complete if Known

Application Number	Not yet assigned
Filing Date	November 20, 2000
First Named Inventor	Jeffrey G. Ort
Examiner Name	Not yet assigned
Group Art Unit	Not yet assigned
Attorney Docket No.	41003.P038

METHOD OF PAYMENT

1. ☒ The Commissioner is hereby authorized to charge ~~XXXX~~ credit any overpayments to:
- Deposit Account Number: 501569
- Deposit Account Name: Columbia IP Law Group, LLC
- ☒ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17
- ☒ Applicant claims small entity status. See 37 CFR 1.27
2. ☒ Payment Enclosed:
- ☒ Check ☐ Credit card ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
101 710	201 355	Utility filing fee	355.00
106 320	206 160	Design filing fee	
107 490	207 245	Plant filing fee	
108 710	208 355	Reissue filing fee	
114 150	214 75	Provisional filing fee	

SUBTOTAL (1) (\$) 355.00

2. EXTRA CLAIM FEES

Total Claims: 42 -20** = 22 x 9.00 = 198.00

Independent Claims: 12 -3** = 9 x 40.00 = 360.00

Multiple Dependent: =

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
103 18	203 9	Claims in excess of 20
102 80	202 40	Independent claims in excess of 3
104 270	204 135	Multiple dependent claim, if not paid
109 80	209 40	** Reissue independent claims over original patent
110 18	210 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$) 558.00

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
105 130	205 65	Surcharge - late filing fee or oath	
127 50	227 25	Surcharge - late provisional filing fee or cover sheet	
139 130	139 130	Non-English specification	
147 2,520	147 2,520	For filing a request for <i>ex parte</i> reexamination	
112 920*	112 920*	Requesting publication of SIR prior to Examiner action	
113 1,840*	113 1,840*	Requesting publication of SIR after Examiner action	
115 110	215 55	Extension for reply within first month	
116 390	216 195	Extension for reply within second month	
117 890	217 445	Extension for reply within third month	
118 1,390	218 695	Extension for reply within fourth month	
128 1,890	228 945	Extension for reply within fifth month	
119 310	219 155	Notice of Appeal	
120 310	220 155	Filing a brief in support of an appeal	
121 270	221 135	Request for oral hearing	
138 1,510	138 1,510	Petition to institute a public use proceeding	
140 110	240 55	Petition to revive - unavoidable	
141 1,240	241 620	Petition to revive - unintentional	
142 1,240	242 620	Utility issue fee (or reissue)	
143 440	243 220	Design issue fee	
144 600	244 300	Plant issue fee	
122 130	122 130	Petitions to the Commissioner	
123 130	123 130	Petitions related to provisional applications	
126 180	126 180	Submission of Information Disclosure Stmt	
581 40	581 40	Recording each patent assignment per property (times number of properties)	40.00
146 710	246 355	Filing a submission after final rejection (37 CFR § 1.129(a))	
149 710	249 355	For each additional invention to be examined (37 CFR § 1.129(b))	
179 710	279 355	Request for Continued Examination (RCE)	
169 900	169 900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 40.00

SUBMITTED BY

Name (Print/Type)	Aloysius T.C. AuYeung	Registration No. (Attorney/Agent)	35,432	Telephone	503-534-2800
Signature		Date	11/20/00		

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APPLICATION FOR UNITED STATES LETTERS PATENT

FOR

**Techniques For Displaying Non-blocking Always Visible
Displays And Their Applications**

Inventor(s):
Jeffrey G. Ort
Eric Engstrom

Prepared by:

COLUMBIA IP LAW GROUP, LLC

"Express Mail" label number: EL605443126US

09713363-11000

BACKGROUND OF THE INVENTION

1. Field of the Invention

10 2. Background Information

20 In certain applications, such as annotating a document, it is desirable to simulate the effect of transparency. That is, the contents of the underlying display windows, including e.g. the icons of the desktop are made visible. See e.g. IBM Technical Disclosure Bulletins, April 1988, pp.268-270, and June 1994, pp.303-304.

Ort et al – Technique For Displaying
Non-Blocking Always Visible Displays ..

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manufacturers and/or content providers would like to be able to persistently display an always visible logo or other identifying marks, if not for the concern of irritating a user because the logo/mark may obstruct the user's view of other contents.

Thus, additional techniques for displaying and applying non-blocking always
5 visible displays (including windows), especially in operating environments where such supports are not provided by the operating system, are desired.

SUMMARY OF THE INVENTION

10

A non-blocking always visible display application is provided to copy and save first pixel values corresponding to a first display screen area, blend the copied first pixel values with second pixel values corresponding to a non-blocking always visible display to generate third pixel values, and replace the original first pixel
15 values with the third pixel values to effectuate display of the non-blocking always visible display.

In one embodiment, the application further monitors for display operations that impact the first display screen area, and upon detection of such a display operation, replaces the third pixel values with the first pixel values using the saved
20 first pixel values. Thereafter, upon completion of the impacting display operation, the application copies and saves fourth pixel values corresponding to the first display screen area, blends the copied fourth pixel values with the second pixel values to generate fifth pixel values, and replaces the original fourth pixel values with the fifth pixel values to sustain the non-blocking always visible characteristic of
25 the non-blocking always visible display. In one embodiment, the re-blending and replacement is advantageously delayed to improve efficiency of operation.

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BRIEF DESCRIPTION OF DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references
5 denote similar elements, and in which:

Figures 1a-1e illustrate a number of end user interface views of a number of contemplated applications of the present invention, in accordance with a number of embodiments;

Figure 2 illustrates a component view of a system, incorporated with the non-
10 blocking always visible display application of the present invention, in accordance with one embodiment;

Figures 3-7 illustrate the operational flow of the relevant aspects of the non-blocking always visible display application of **Fig. 1**, including its overall flow, response to a display call, response to a blend sub-function call, response to an
15 intercepted display screen memory operation function call, response to a relevant cursor event, in accordance with one embodiment each; and

Figure 8 illustrates an architectural view of an example computer system suitable for practicing the present invention, in accordance with one embodiment.

DETAILED DESCRIPTION OF THE INVENTION

In the following description, various aspects of the present invention will be described. However, it will be apparent to those skilled in the art that the present
25 invention may be practiced with only some or all aspects of the present invention. For purposes of explanation, specific numbers, materials and configurations are set

forth in order to provide a thorough understanding of the present invention. However, it will also be apparent to one skilled in the art that the present invention may be practiced without the specific details. In other instances, well known features are omitted or simplified in order not to obscure the present invention.

5 Parts of the description will be presented using terms such as end-user interfaces, buttons, and so forth, commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. Parts of the description will be presented in terms of operations performed by a computing device, using terms such as monitoring, intercepting, copying, saving, replacing, and so forth. As
10 well understood by those skilled in the art, these quantities and operations take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through mechanical and electrical components of a digital system. The term digital system includes general purpose as well as special purpose computing machines, systems, and the like, that are standalone,
15 adjunct or embedded.

Various operations will be described in turn in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent.

Furthermore, the phrase "in one embodiment" will be used repeatedly, however the
20 phrase does not necessarily refer to the same embodiment, although it may.

Overview of Applications

Referring now to **Figures 1a-1e**, wherein five block diagrams illustrating a number of end user views of a number of applications of the present invention, in
25 accordance with one embodiment each, are shown. As illustrated in **Fig. 1a**, the non-blocking always visible display application of the present invention is designed

to be able to generate known non-blocking always visible display window, as exemplified by window **104**, where both contents of window **104** as well as contents of window **102** in their intersecting area **106** are visible. However, as will be described in more detail below, the non-blocking always visible display application of the present invention generates the non-blocking always visible display window in the role of an application, without operating system or hardware supports designed to support the generation of transparent/translucent display windows.

As illustrated in **Figs 1b-1e**, the present invention contemplates the extension of the capabilities of the non-blocking always visible display applications into the generation of non-blocking always visible on-line data monitor, such as monitor **106**, for monitoring on-line stock data, headlines and the like, non-blocking always visible tool bars, such as tool bar **124**, non-blocking always visible animated objects, such as assistant **134**, and non-blocking always visible logo/mark, such as mark **146**. In each case, "underlying" contents in the intersecting display screen areas, such as areas **108**, **128**, **136**, and **144**, are also visible (as well as interactable). As a result of this visibility (and interactability), it is much more acceptable to keep on-line monitor **106**, tool bar **124**, animated object **134** and logo/mark **144** open, displayed or running.

Component View of Environment

Referring now to **Figure 2**, wherein a block diagram illustrating a component view of a system environment suitable for practicing the present invention, in accordance with one embodiment. As illustrated, system environment **200** include operating system **204** having window manager **206**, graphics services **208** and device drivers **210**, offering a number of system services in support of applications, such as applications **202**. Among the services offered are windowing services

offered by window manager **206** to facilitate concurrent display of the execution results of multiple applications **202** executing at the same time. The services also include graphics services offered by graphics services **208** to facilitate graphics rendering by the executing applications. These graphics services include high level graphics calls for rendering complex graphical objects, as well as low level "direct draw" services for rendering low level detail graphical primitives. Device drivers **210** offer various device specific services, including in particular display rendering and associated operations on the pixel value contents of the display screen memory (not shown). Further, operating system **204** includes services for notifying applications **202** of cursor events associated with the display windows of the applications, as well as automatic handling of a number of basic cursor events, e.g. "dragging" or otherwise relocating a display window. However, it is not necessary for operating system **204** to offer any service specifically designed to support the generation and rendering of transparent/translucent displays.

Non-blocking always visible display application **212** operates as an application to operating system **204**, just like any other applications **202**. If operating system **204** offers re-direction services for re-directing function calls and/or cursor events, non-blocking always visible display application **212** would take advantage of these services, and registers itself for such re-direction. However, such services are optional. If they are not offered, non-blocking always visible display application **212** effectuates the desired re-directs, through one of a number of call/notification interception techniques known in the art, e.g. through modification of the task table of operating system **204**.

Overall Operational Flow

Figure 3 illustrates the overall operational flow of the relevant aspects of non-blocking always visible display application **212** of the present invention, in accordance with one embodiment. As illustrated, during initialization or set up time, non-blocking always visible display application **212** would “register” itself (as described earlier) with operating system **204** to redirect all display screen memory operation calls to device driver **210** to itself, block **302**. Thereafter, non-blocking always visible display application **212** would await for event notifications (including redirected “calls”), block **304**. Upon notified of an event, non-blocking (NB) always visible display application **212** would handle the notification accordingly, block **306**. In particular, NB always visible display application **212** would handle certain call and cursor event redirections as set forth below.

Response to Displaying a NB Always Visible Display

Figure 4 illustrates the operational flow of the relevant aspects of NB always visible display application **212** of the present invention, when responding to a request to render a NB always visible display, in accordance with one embodiment. As illustrated, in response to a call (e.g. by another application) to render such display, e.g. NB always visible window **104**, on-line data monitor **106**, tool bar **124**, animated assistant **134**, and logo/mark **144**, NB always visible application **212** determines the physical location of the display screen area, on which the NB always visible display is to be displayed. The determination is typically made by mapping the logical location information provided with the function call to the actual physical location. Alternatively, such as the contemplated logo/mark application, the location may be defaulted to an initial area.

Upon making the determination, for the illustrated embodiment, NB always visible application **212** invokes a blending sub-function to blend the underlying contents with the content of the NB always visible display, which also causes the blended content to be displayed, thereby effectuating the desired non-blocking (or see through) effect, block **404** (to be described more fully below). Upon causing the blending and output of the blended content (to effectuate the non-blocking or see through effect), NB always visible application **212** "registers" itself to have cursor events associated with the display screen area where the NB always visible display is displayed, redirected to itself for processing, block **408**.

Blending, Output of Blended Content, and Availability of Underlying Content

Figure 5 illustrates the operational flow of the relevant aspects of NB always visible display application **212** of the present invention, when responding to a blending and output of blended content request, in accordance with one embodiment. As illustrated, upon request, NB always visible display application **212** copies and saves the pixel values corresponding to the target display screen area from the display screen memory to a first buffer (not shown), block **502**. Thereafter, NB always visible display application **212** blends the copied pixel values with the pixel values of the NB always visible display (stored e.g. in a second buffer (also not shown)), to generate a new set of pixel values representing the blended content, block **504**. The blending is performed in accordance with a current blending setting (α). That is, the blended content equals $(\alpha \times p1) + ((1 - \alpha) \times p2)$, where $p1$ represents the pixel values of the underlying contents, and $p2$ represents the pixel values of the NB always visible display. The operation is known as alpha-blending, and the technique is known in the art.

Thereafter, NB always visible display application **212** causes the original corresponding pixel values in the display screen memory to be replaced by the newly generated pixel values representing the blended content, block **506**. In one embodiment, NB always visible display application **212** stores the pixel values of the blended content in a third buffer (also not shown), and marks the buffer as “dirty” (i.e. its content changed). For this embodiment, NB always visible display application **212** includes a “thread” that periodically checks to determine if the blended content buffer has been marked “dirty”. If not, no action is taken. But, if it is, it copies the newly generated pixel values from the blended content buffer into the display screen memory replacing the earlier described original pixel values corresponding to the display screen area where the NB always visible display is to be displayed.

[As those skilled in the art would appreciate, when ($\alpha = .5$), both the underlying contents as well as the content of the NB always visible display are equally favored. On the other hand, if ($\alpha < .5$), the underlying content is biased or favored, and if ($\alpha > .5$), the content of the NB always visible display is biased or favored.]

Operations impacting underlying content

Figure 6 illustrates the operational flow of the relevant aspects of NB always visible display application **212** of the present invention, on handling graphics services and display screen memory operation calls, in accordance with one embodiment. As illustrated, upon intercepting a display screen memory operation call, NB always visible display application **212** determines if the call is relevant, i.e. whether the operation will impact the display screen area where the NB always visible display is displayed, block **602**. NB always visible display application **212**

makes the determination by examining the physical location information, and determining if the physical locations intersect with the physical locations of the NB always visible display.

If it is determined that the call is not relevant, i.e. the operation does not impact the display screen area where the NB always visible display is displayed, NB always visible display application **212** forwards the call to its specified recipient, i.e. device drivers **210**, for handling, block **604**. On the other hand, if it is determined that the call is relevant, i.e. the operation does impact the display screen area where the NB always visible display is displayed, NB always visible display application **212** first restores the saved pixel values for the area, block **606**, before forwarding the call to the intended recipient to handle, block **608**. Thereafter, NB always visible display application **212** awaits completion of the operation, block **610**, which may be accomplished in any one of a number of techniques known in the art. Upon detecting completion of the operation, NB always visible display application **212** invokes the blending sub-function to regenerate the blended content, and causes the newly generated blended content to be output substantially as described earlier, block **612**.

In one embodiment, upon copying and saving the pixel values in the display screen buffer corresponding to the display screen area for the NB always visible display (equivalent of operation **502**), instead of immediately performing the earlier described blending (operation **504**), the blending sub-function merely replaces the copied pixel values in the display screen buffer with the last generated blended values (for efficiency of operation). Thereafter, at a predetermined later point in time, the blending sub-function blends the copied and saved pixel values with the content of the NB always visible display to generate new blended content. Again, in a preferred mode of operation, the buffer containing the re-generated blended

content is then marked “dirty”, and an asynchronously executing thread is employed to periodically check for the need to re-output the blended content. As those skilled in the art will appreciate, the delayed re-blending and asynchronous output provide a more efficient manner of operation. The amount of delay is application dependent and may be empirically chosen.

Thus, through interception of calls to display screen memory operations by device driver **210**, NB always visible display application **212** is nevertheless able to facilitate proper processing of the underlying contents, notwithstanding the absence of specifically designed transparent/translucent display support by the operating system, and application **212** is executing as a non-privileged application.

Handling Cursor Events in the Display Area

Figure 7 illustrates the operational flow of the relevant aspects of NB always visible display application **212** of the present invention, for handling cursor events associated with the display area where the NB always visible display is displayed, in accordance with one embodiment. As illustrated, upon intercepting a cursor event notification, NB always visible display application **212** determines if the blended content is fully biased in favor of the NB always visible display, block **702**. In one embodiment, NB always visible display application **212** makes the determination by examining the current blending setting, i.e. the value of α , to see if α is substantially equal to 1.

If not, NB always visible display application **212** increases the current blending setting, i.e. the value of α , and invokes the blending sub-function to re-blend the contents and causing the newly generated blended contents to be output, block **704**. Upon doing so, NB always visible display application **212** forwards the

cursor event to the application associated with the underlying content to handle, block **706**.

On the other hand, if back at block **702**, it is determined that the blended content is fully biased in favor of the NB always visible display, i.e. α is substantially equal to 1, NB always visible display application **212** would handle the cursor event itself, block **708**.

As those skilled in the art would appreciate, the effect of these operations is to cause the NB always visible display to gradually become “hardened” (therefore blocking) if a user moves the cursor into the display area. If the user further clicks on the area before the NB always visible display is fully hardened, by virtue of forwarding the cursor event to an application program associated with an underlying window to handle unless the NB always visible display is “hardened”, the user’s action is effectively interpreted as wanting to interact with the underlying content. On the other hand, if the user waits for the “hardening” of the display area before clicking on the area, by virtue of handling the cursor event under the circumstances, the user’s action is effectively interpreted as wanting to interact with the NB always visible display.

The speed the NB always visible display “hardens” depends on how fast α is incremented towards 1. The pace is application dependent. Further, it is not necessary for α to reach 1 before the NB always visible display is consider “fully” biased or hardened. The level at which NB always visible display is to be deem “fully” biased or hardened is also application dependent.

Accordingly, through interception of cursor event notification, and gradual “hardening” of the NB always visible display, NB always visible display application **212** is also nevertheless able to facilitate proper interaction with the underlying contents or the NB always visible display, notwithstanding the absence of

specifically designed transparent/translucent display support by the operating system/hardware, and application **212** is executing as a non-privileged application.

Example Computer System

5 **Figure 8** illustrates an example computer system suitable for use to practice the present invention, in accordance with one embodiment. As shown, system **800** includes one or more processors **802** and system memory **806**. Additionally, system **800** includes mass storage devices **806** (such as diskette, hard drive, CDROM and so forth), GPIO **808** (for interfacing with I/O devices such as keyboard, cursor control and so forth) and communication interfaces **810** (such as network interface cards, modems and so forth). The elements are coupled to each other via system bus **812**, which represents one or more buses. In the case of multiple buses, they are bridged by one or more bus bridges (not shown). Each of these elements perform its conventional functions known in the art. In particular, system memory

10 **804** and mass storage **806** are employed to store a working copy **814b** and a permanent copy **814a** of the programming instructions implementing NB always visible display application **212**. Except for its use to host the novel NB always visible display application **212** of the present invention, and practice display of NB always visible displays, such as on-line monitor **106**, task bar **124**, animated assistant **134**

15 and logo/mark **144**. The constitution of these elements **802-814** are known, and accordingly will not be further described.

20

 Accordingly, a set of techniques associated with efficient rendering of non-blocking always visible displays have been described. It can be seen that the

25 techniques may effectuate the desired displays without requiring supports from the operating system or hardware, that are specifically designed for the rendering of

5

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CLAIMS

What is claimed is:

- 1 1. A method comprising:
 - 2 copying and saving first pixel values corresponding to a first display screen
 - 3 area;
 - 4 blending the copied first pixel values with second pixel values to generate
 - 5 third pixel values;
 - 6 replacing the original first pixel values with the third pixel values to effectuate
 - 7 display of a non-blocking always visible display;
 - 8 monitoring for display operations that impact the first display screen area;
 - 9 upon detection of such a display operation, replacing said third pixel values
 - 10 with said first pixel values using said saved first pixel values;
 - 11 upon completion of the detected operation, copying and saving fourth pixel
 - 12 values corresponding to the first display screen area;
 - 13 blending the copied fourth pixel values with said second pixel values to
 - 14 generate fifth pixel values;
 - 15 replacing the original fourth pixel values with the fifth pixel values to sustain
 - 16 the non-blocking always visible characteristic of the non-blocking always visible
 - 17 display.
- 1 2. The method of claim 1, wherein the method further comprises
 - 2 marking a buffer holding said third/fifth pixel values changed; and
 - 3 periodically checking to determining if said buffer has been marked changed.

- 1 7. A method comprising:
 - 2 copying and saving first pixel values corresponding to a first display screen
 - 3 area;
 - 4 blending the copied first pixel values with second pixel values corresponding
 - 5 to a non-blocking always visible display to generate third pixel values;

1 8. The method of claim 7, wherein said blending is performed in accordance
2 with a current blending setting, and said determining comprises determining if the
3 current blending setting is greater than a predetermined threshold, favoring contents
4 of said non-blocking always visible display.

1 10. A method comprising:

2 copying and saving first pixel values corresponding to a first display screen

3 area on which a non-block always visible on-line data monitor is to be rendered;

4 blending the copied first pixel values with second pixel values corresponding

5 to the non-block always visible on-line data monitor to generate third pixel values;

6 and

7 replacing the original first pixel values with the third pixel values to effectuate

8 display of the on-line data monitor with the non-blocking always visible attribute to

1 11. The method of claim 10, wherein the method further comprises
2 monitoring for display operations that impact the first display screen area;
3 upon detection of such a display operation, replacing said third pixel values
4 with said first pixel values using said saved first pixel values;
5 upon completion of said display operation, copying and saving fourth pixel
6 values corresponding to the first display screen area;
7 blending the copied fourth pixel values with said second pixel values to
8 generate fifth pixel values; and
9 replacing the original fourth pixel values with the fifth pixel values to sustain
10 the non-blocking always visible characteristic of the on-line monitor.

1 12. The method of claim 10, wherein the method further comprises
2 intercepting cursor events associated with said first display screen area; and
3 determining whether the cursor events are to be handled by an application
4 program associated with said non-blocking always visible on-line data monitor or an
5 application program associated with an underlying display window, based at least in
6 part on a current blending bias between said non-blocking always visible on-line
7 data monitor and underlying display windows.

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1 16. A method comprising:

2 copying and saving first pixel values corresponding to a first display screen
3 area on which a non-block always visible logo/mark is to be rendered;
4 blending the copied first pixel values with second pixel values corresponding
5 to the non-block always visible logo/mark to generate third pixel values; and
6 replacing the original first pixel values with the third pixel values to effectuate
7 display of the logo/mark with the non-blocking always visible attribute.

1 17. The method of claim 16, wherein the method further comprises
2 monitoring for display operations that impact the first display screen area;
3 upon detection of such a display operation, replacing said third pixel values
4 with said first pixel values using said saved first pixel values;
5 upon completion of said display operation, copying and saving fourth pixel
6 values corresponding to the first display screen area;
7 blending the copied fourth pixel values with said second pixel values to
8 generate fifth pixel values; and
9 replacing the original fourth pixel values with the fifth pixel values to sustain
10 the non-blocking always visible characteristic of the logo/mark.

1 18. The method of claim 16, wherein the method further comprises
2 intercepting cursor events associated with said first display screen area; and
3 determining whether the cursor events are to be handled by an application
4 program associated with said non-blocking always visible logo/mark or an
5 application program associated with an underlying display window, based at least in
6 part on a current blending bias between said non-blocking always visible logo/mark
7 and underlying display windows.

1 19. A method comprising:
2 copying and saving first pixel values corresponding to a first display screen
3 area on which a non-block always visible animated assistant is to be rendered;
4 blending the copied first pixel values with second pixel values corresponding
5 to the non-block always visible animated assistant to generate third pixel values;
6 and
7 replacing the original first pixel values with the third pixel values to effectuate
8 display of the animated assistant with the non-blocking always visible attribute.

1 20. The method of claim 19, wherein the method further comprises
2 monitoring for display operations that impact the first display screen area;
3 upon detection of such a display operation, replacing said third pixel values
4 with said first pixel values using said saved first pixel values;
5 upon completion of said display operation, copying and saving fourth pixel
6 values corresponding to the first display screen area;
7 blending the copied fourth pixel values with said second pixel values to
8 generate fifth pixel values; and
9 replacing the original fourth pixel values with the fifth pixel values to sustain
10 the non-blocking always visible characteristic of the animated assistant.

1 21. The method of claim 19, wherein the method further comprises
2 intercepting cursor events associated with said first display screen area; and
3 determining whether the cursor events are to be handled by an application
4 program associated with said non-blocking always visible animated assistant or an
5 application program associated with an underlying display window, based at least in

6 part on a current blending bias between said non-blocking always visible animated
7 assistant and underlying display windows.

1 22. An apparatus comprising:
2 storage medium having stored therein programming instructions designed to
3 copy and save first pixel values corresponding to a first display screen
4 area,
5 blend the copied first pixel values with second pixel values corresponding
6 to a non-blocking always visible display to generate third pixel values,
7 replace the original first pixel values with the third pixel values to
8 effectuate display of the non-blocking always visible display,
9 monitor for display operations that impact the first display screen area,
10 upon detection of such a display operation, replace said third pixel values
11 with said first pixel values using said saved first pixel values,
12 copy and save fourth pixel values corresponding to the first display screen
13 area,
14 blend the copied fourth pixel values with said second pixel values to
15 generate fifth pixel values,
16 replace the original fourth pixel values with the fifth pixel values to sustain
17 the non-blocking always visible characteristic of the non-blocking
18 always visible display; and
19 a processor coupled to the storage medium to execute the programming
20 instruction.

1 23. The apparatus of claim 1, wherein the programming instructions are further
2 designed to

3 mark a buffer holding said third/fifth pixel values changed, and
4 periodically check to determining if said buffer has been marked changed.

1 24. The apparatus of claim 22, wherein said programming instructions are
2 designed to
3 intercept invocations of display screen memory operations; and
4 determine if targeted display screen areas of the display screen memory
5 operations being invoked intersect with said first screen display area.

1 25. The apparatus of claim 22, wherein the programming instructions are further
2 designed to
3 intercept cursor events associated with said first display screen area, and
4 determine whether the cursor events are to be handled by an application
5 program associated with said non-blocking always visible display or an application
6 program associated with an underlying display window.

1 26. The apparatus of claim 25, wherein said programming instructions are
2 designed to perform each of said blending in accordance with a then current
3 blending setting, and perform said determine by determining if the current blending
4 setting is greater than a predetermined threshold, favoring contents of said non-
5 blocking always visible display.

1 27. The apparatus of claim 22, wherein said non-blocking always visible display
2 is a selected one of an on-line data monitor, a tool bar, a logo/mark, and an
3 animated assistant.

1 29. The apparatus of claim 28, wherein said programming instructions are
2 designed to perform said blend in accordance with a current blending setting, and
3 perform said determine by determining if the current blending setting is greater than
4 a predetermined threshold, favoring contents of said non-blocking always visible
5 display.

1 30. The apparatus of claim 28, wherein said non-blocking always visible display
2 is a selected one of an on-line data monitor, a tool bar, a logo/mark, and an
3 animated assistant.

1 31. An apparatus comprising:
2 storage medium having stored therein programming instructions designed to
3 copy and save first pixel values corresponding to a first display screen
4 area on which a non-block always visible on-line data monitor is to be
5 rendered;
6 blend the copied first pixel values with second pixel values corresponding
7 to the non-block always visible on-line data monitor to generate third
8 pixel values, and
9 replace the original first pixel values with the third pixel values to
10 effectuate display of the on-line data monitor with the non-blocking
11 always visible attribute to provide visual differentiation between said
12 on-line data monitor and underlying display windows associated with
13 locally executed application programs; and
14 a processor coupled to the storage medium to execute the programming
15 instructions.

1 32. The apparatus of claim 31, wherein the programming instructions are further
2 designed to
3 monitor for display operations that impact the first display screen area,
4 upon detection of such a display operation, replace said third pixel values
5 with said first pixel values using said saved first pixel values,

1 33. The apparatus of claim 31, wherein the programming instructions are further
2 designed to
3 intercept cursor events associated with said first display screen area, and
4 determine whether the cursor events are to be handled by an application
5 program associated with said non-blocking always visible on-line data monitor or an
6 application program associated with an underlying display window, based at least in
7 part on a current blending bias between said non-blocking always visible on-line
8 data monitor and underlying display windows.

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1 38. The apparatus of claim 37, wherein the programming instructions are further
2 designed to
3 monitor for display operations that impact the first display screen area,
4 upon detection of such a display operation, replace said third pixel values
5 with said first pixel values using said saved first pixel values,
6 upon completion of said display operation, copy and save fourth pixel values
7 corresponding to the first display screen area,
8 blend the copied fourth pixel values with said second pixel values to generate
9 fifth pixel values, and
10 replace the original fourth pixel values with the fifth pixel values to sustain the
11 non-blocking always visible characteristic of the logo/mark.

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4 determine whether the cursor events are to be handled by an application
5 program associated with said non-blocking always visible logo/mark or an
6 application program associated with an underlying display window, based at least in
7 part on a current blending bias between said non-blocking always visible logo/mark
8 and underlying display windows.

1 40. An apparatus comprising:
2 storage medium having stored therein programming instructions designed to
3 copy and save first pixel values corresponding to a first display screen
4 area on which a non-block always visible animated assistant is to be
5 rendered,
6 blend the copied first pixel values with second pixel values corresponding
7 to the non-block always visible animated assistant to generate third
8 pixel values, and
9 replace the original first pixel values with the third pixel values to
10 effectuate display of the animated assistant with the non-blocking
11 always visible attribute; and
12 a processor coupled to the storage medium to execute the programming
13 instructions.

1 41. The apparatus of claim 40, wherein the programming instructions are further
2 designed to
3 monitor for display operations that impact the first display screen area,
4 upon detection of such a display operation, replace said third pixel values
5 with said first pixel values using said saved first pixel values,

6 upon completion of said display operation, copy and save fourth pixel values
7 corresponding to the first display screen area,
8 blend the copied fourth pixel values with said second pixel values to generate
9 fifth pixel values, and
10 replace the original fourth pixel values with the fifth pixel values to sustain the
11 non-blocking always visible characteristic of the animated assistant.

1 42. The apparatus of claim 40, wherein the programming instructions are further
2 designed to
3 intercept cursor events associated with said first display screen area, and
4 determine whether the cursor events are to be handled by an application
5 program associated with said non-blocking always visible animated assistant or an
6 application program associated with an underlying display window, based at least in
7 part on a current blending bias between said non-blocking always visible animated
8 assistant and underlying display windows.

1

A non-blocking always visible display application is provided to copy and save first pixel values corresponding to a first display screen area, blend the copied first pixel values with second pixel values corresponding to a non-blocking always visible display to generate third pixel values, and replace the original first pixel values with the third pixel values to effectuate display of the non-blocking always visible display. In one embodiment, the application further monitors for display operations that impact the first display screen area, and re-blend accordingly. In one embodiment, the re-blending and replacement are advantageously delayed. In another embodiment, the application further intercepts and causes cursor events to be handled properly, based at least in part on a current blending bias between the non-blocking always visible display, and the underlying display windows.

100

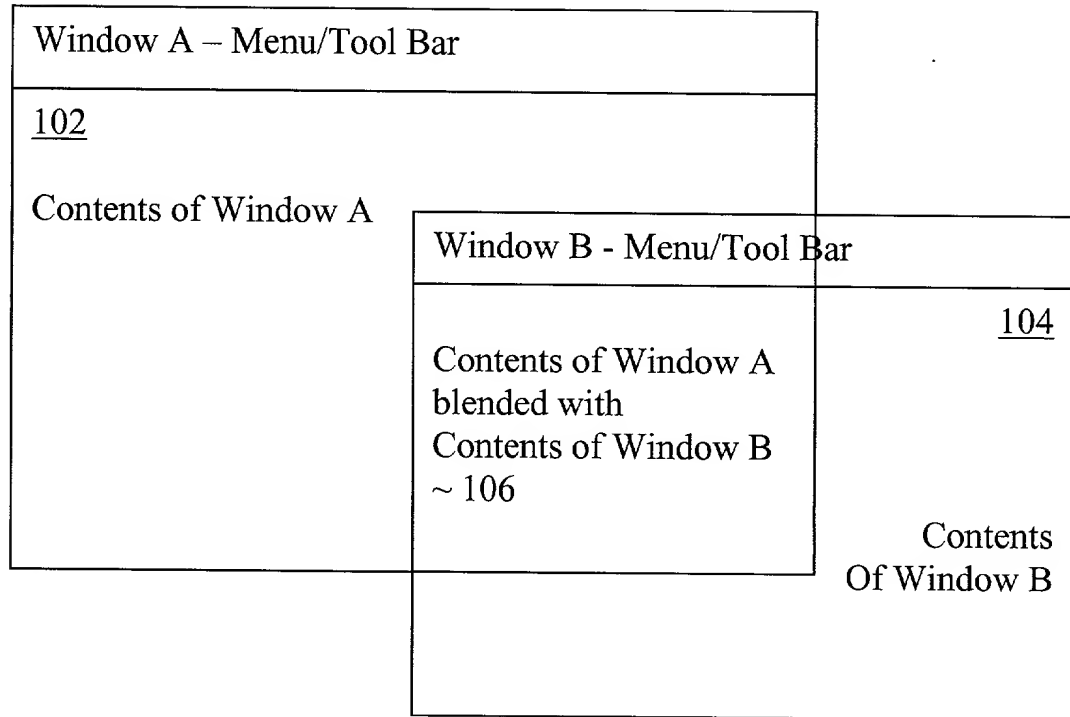


Figure 1a



Figure 1b

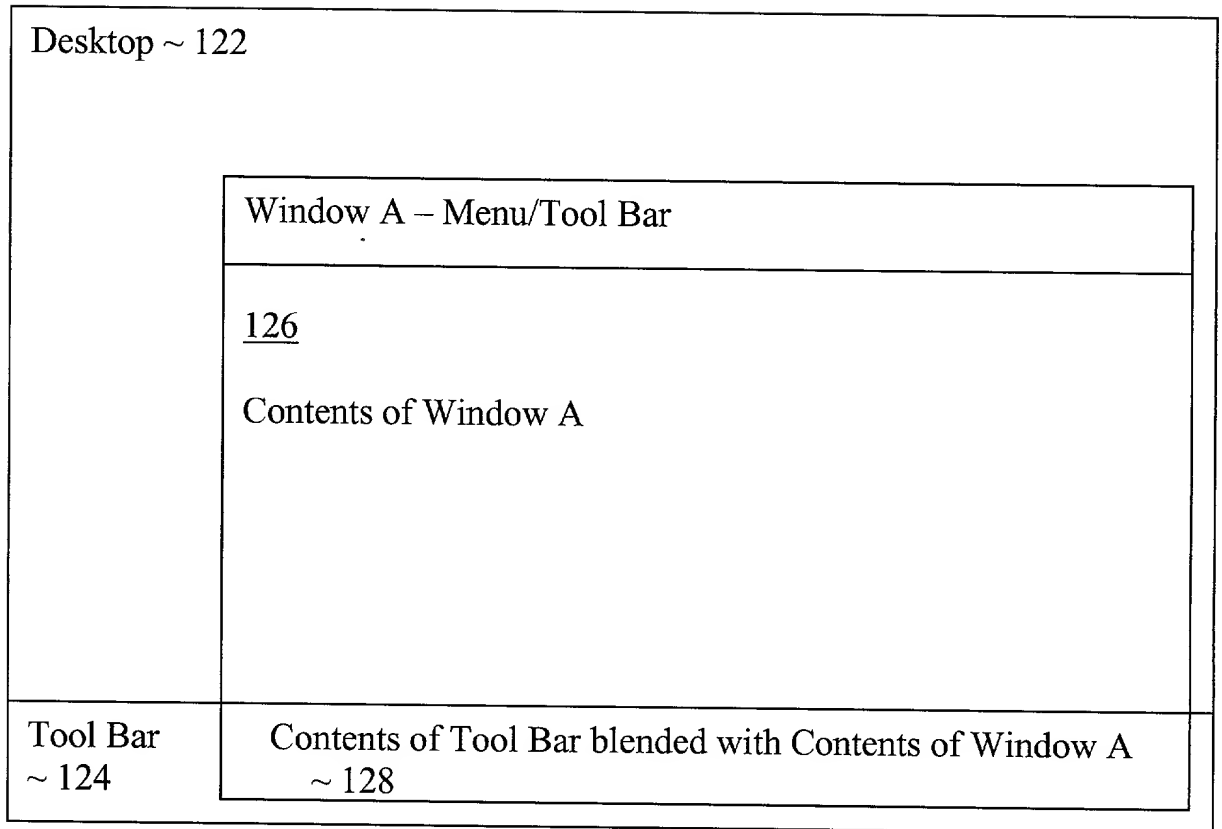


Figure 1c

130

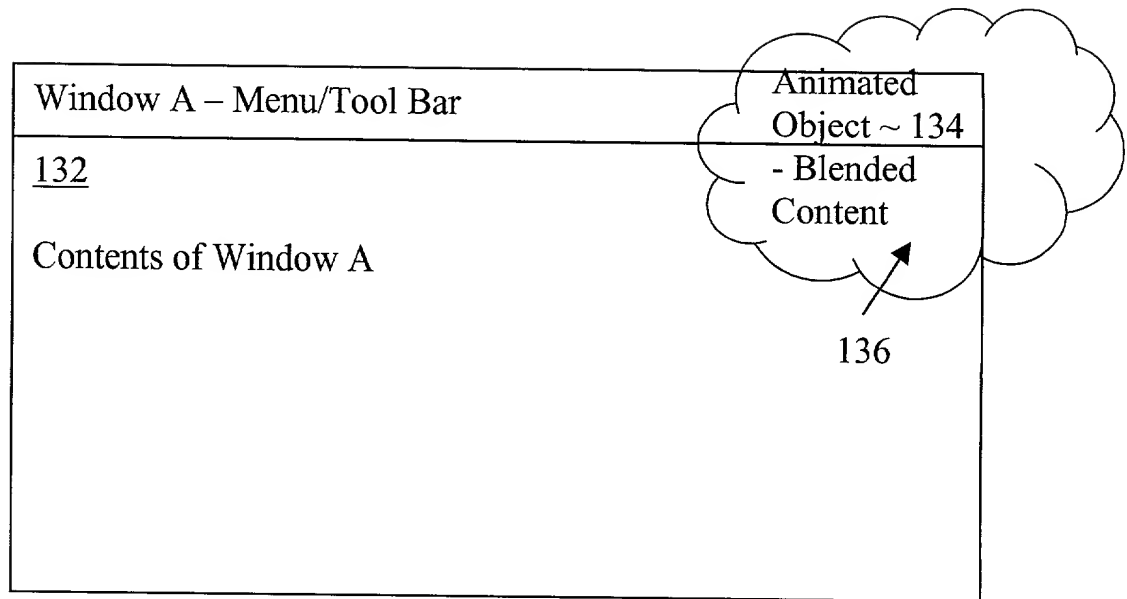


Figure 1d

140

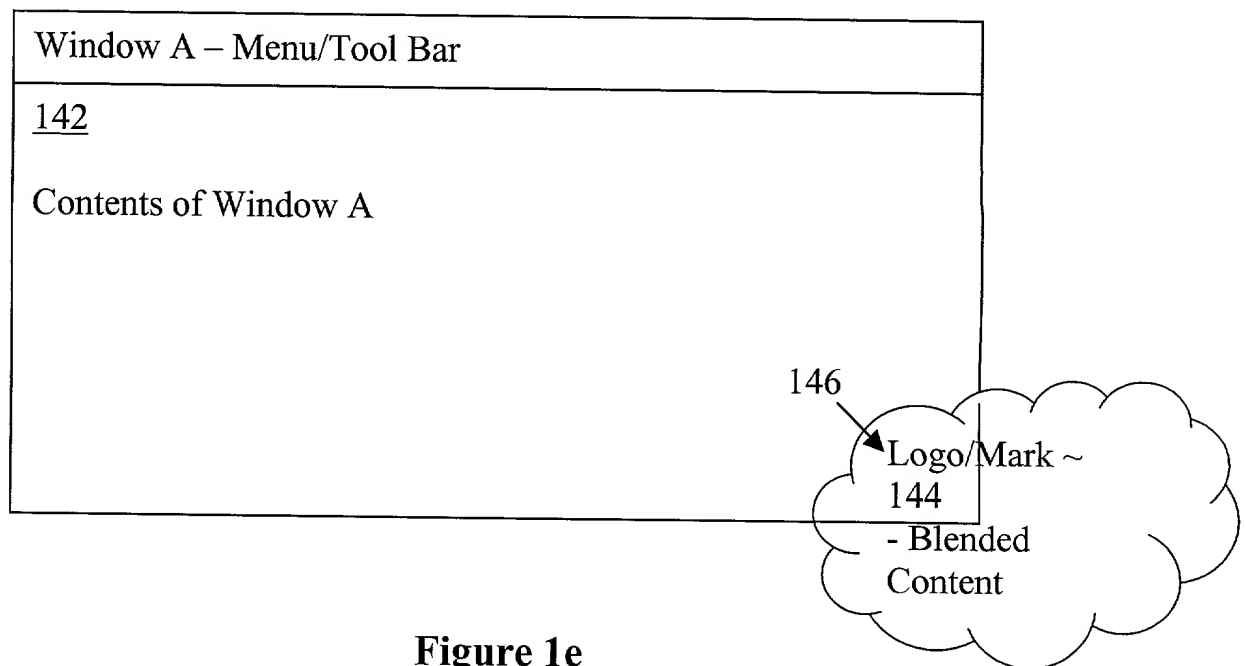


Figure 1e

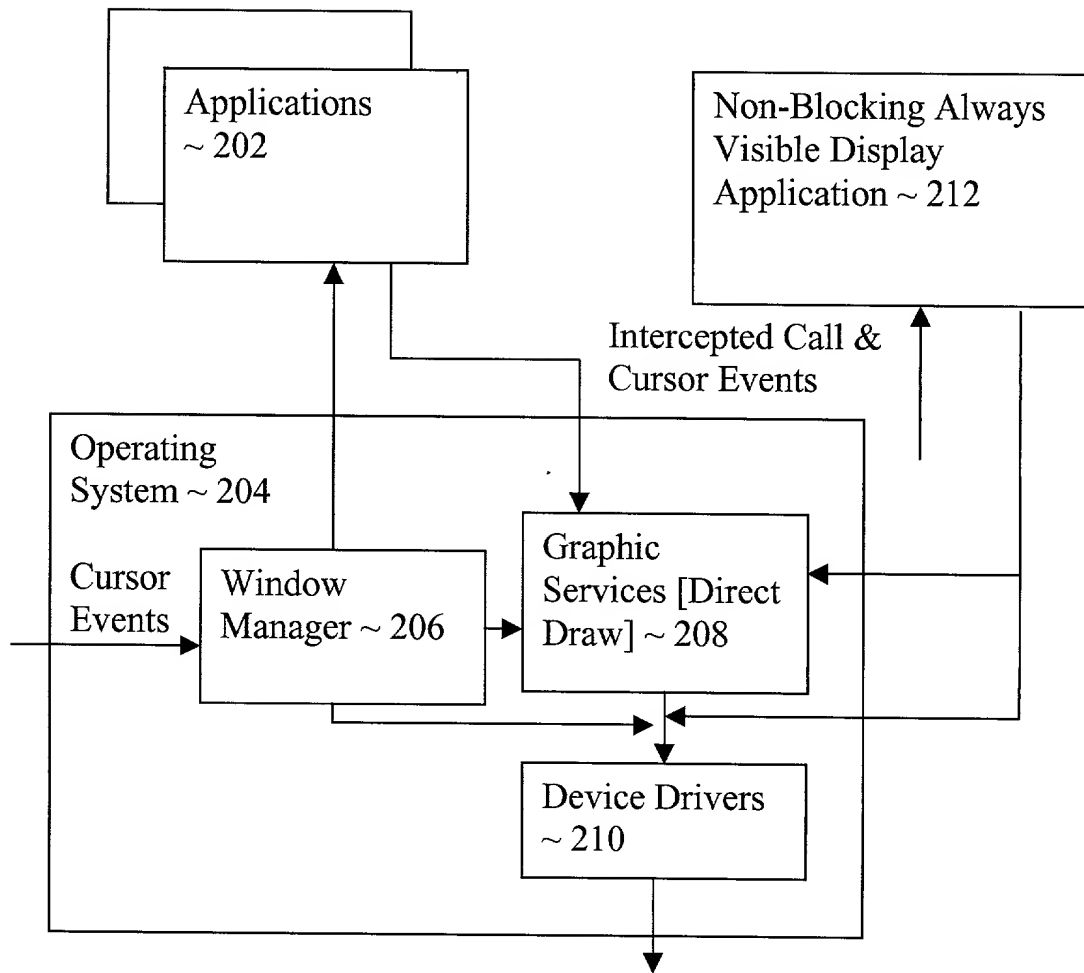


Figure 2

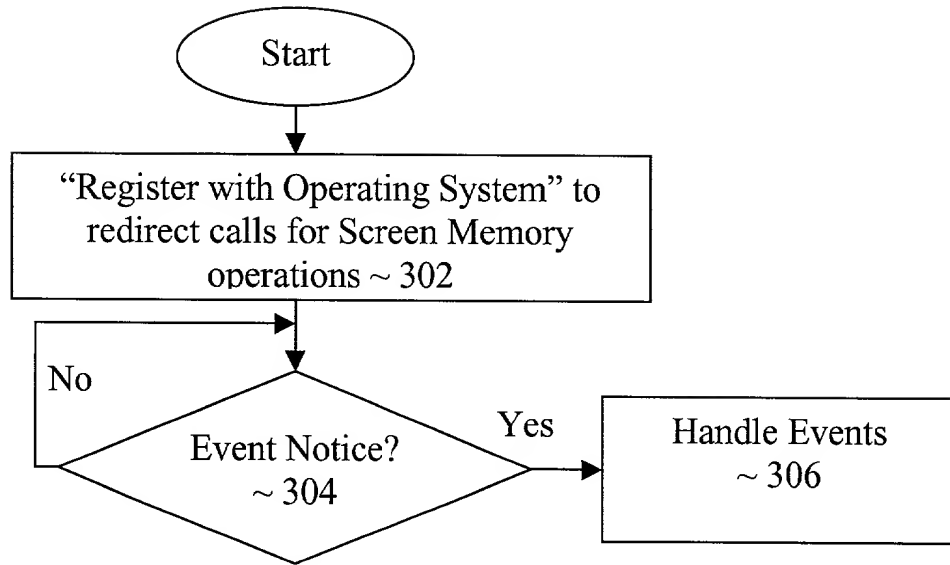


Figure 3

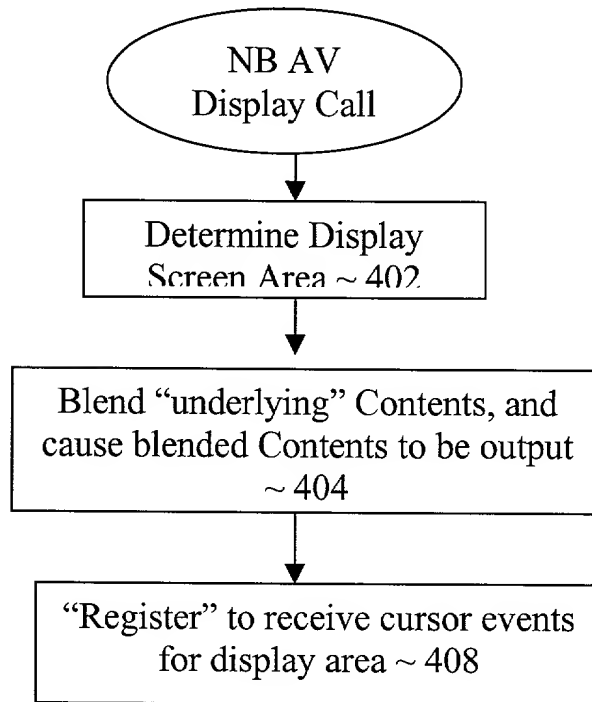


Figure 4

Blend

Copy and Save 1st Pixel Values
Corresponding to Display Screen Area for
NB Always Visible Display ~ 502

Blend Copied 1st Pixel Values with 2nd Pixel
Values of Contents of NB Always Visible
Display to generate 3rd Pixel Values ~ 504

Replace 1st Pixel Values with
generated 3rd Pixel Values ~ 506

Figure 5

18

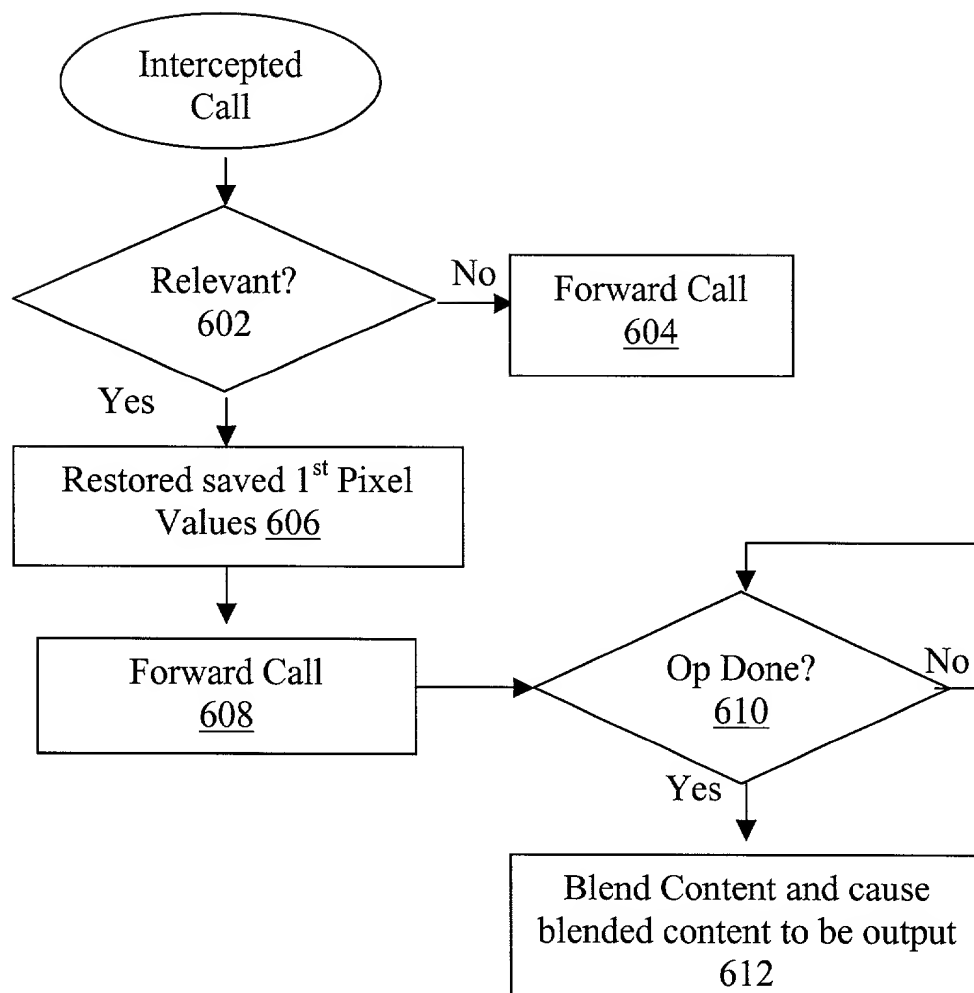


Figure 6

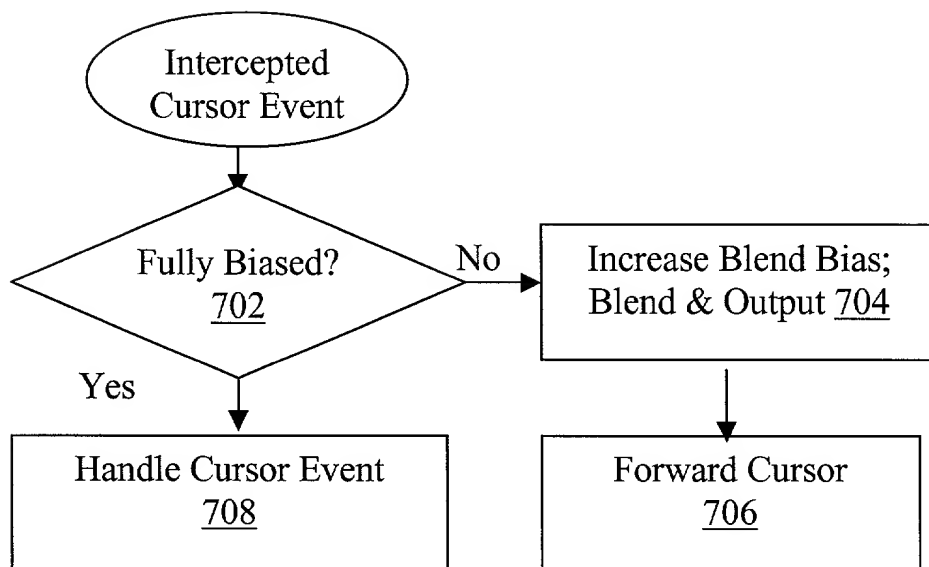


Figure 7

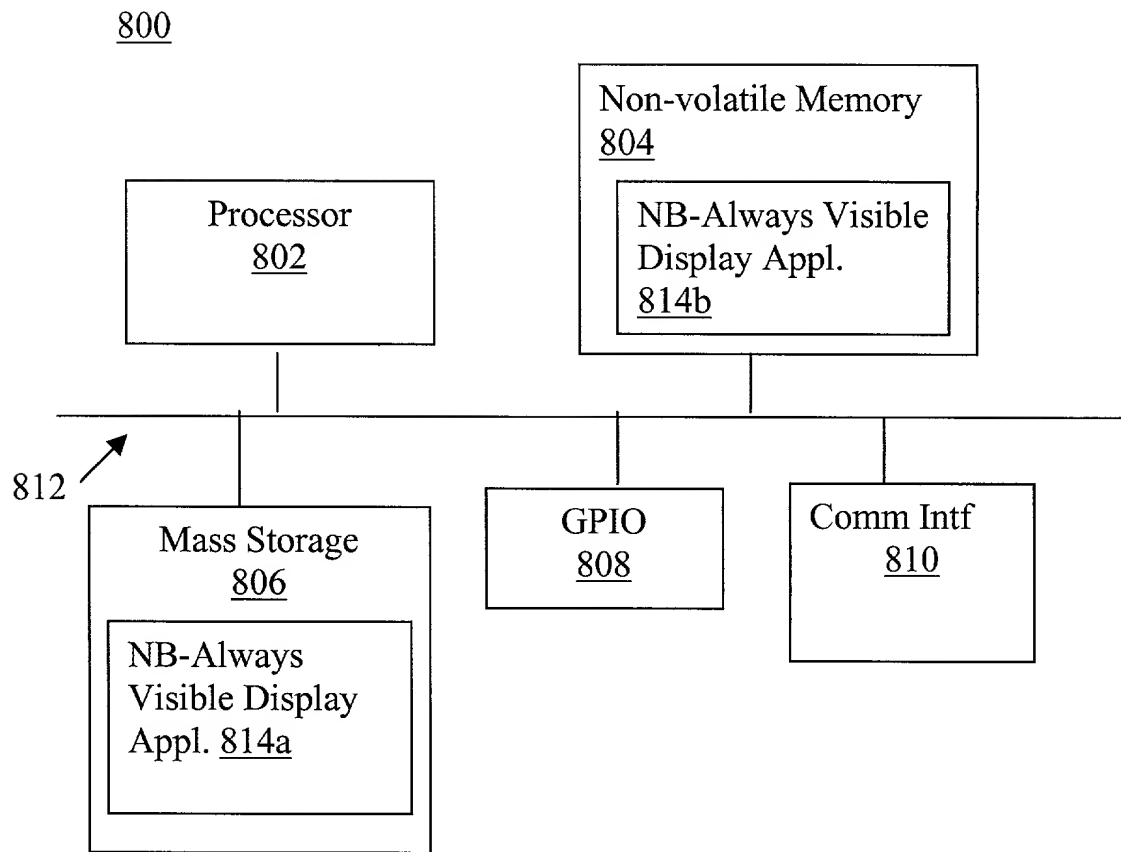


Figure 8

PATENT

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[illegible]

Title 37, Code of Federal Regulations, Section 1.56
Duty to Disclose Information Material to Patentability

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.